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Case Report

Frightening complication after tooth extraction: Pneumomediastinum

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Abstract

Cervicofacial subcutaneous emphysema and pneumomediastinium are among the rare complications that can be seen by tooth extraction. It is mostly seen after trauma, cleaning, vomiting, general anesthesia, head and neck surgery. In this case, we present a patient who admitted to the emergency room with the possibility of extracting the tooth, opening the right face, and sudden pressure swelling there.

A 28-year-old female patient underwent dental extraction on the right cheek and neck. Every general condition was good, she was conscious, oriented, and cooperative. There was shortness of breath and pain in her face. Swelling of the right cheek and neck was seen in the patients whose vital signs were normal. There was redness and heat increase. Subcutaneous crepitation was detected. CT was performed. In the orbital cavity, fairy tale muscle, parapharyngeal cavity, submandibular fossa, superficial cervical fascia and deep cervical fascia symptomatic treatment and antibiotics were recommended. The patient was discharged at the end of the follow-up with antibiotic treatment.

Subcutaneous emphysema and pneumomediastinium, a benign course with complete absorption within 2-7 days, may be self-limiting but rarely surviving such as pneumothorax, pneumopericardium, air embolism, and mediastinitis.

Keywords

Tooth Extraction; Emergency; Pneumomediastinum; Dentistry

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Introduction

The most common surgical dental procedure is the extraction of molar teeth, and mostly, the third molar tooth extraction is carried out in our present day [1, 2]. Complications like pain, infection, bleeding, jaw bone fracture, nerve injuries and tooth fractures may be seen because of tooth extraction [3].

Although subcutaneous emphysema and pneumomediastinum are among the expected complications in general following traumas, vomiting, infections, general anesthesia, head and neck surgeries; subcutaneous emphysema is more commonly seen but is rare after tooth extraction. They are usually seen during 3rd molar tooth extraction and during the use of high-rotation and air-pressure tooth extraction tools [2,4]. Although rare, hematoma may be confused with anaphylaxis due to local anesthesia and infection in the differential diagnosis, which makes it difficult to make the accurate diagnosis [5]. In this case, a patient who presented to the emergency department with sudden swelling on the right side of the face during tooth extraction is presented.

Case Report

A 28-year-old female patient was taken to the Emergency Department due to swelling in the right cheek and neck that started suddenly during tooth extraction. It was told to the emergency department by the dentist that swelling developed in the right half of the face during 3rd molar tooth extraction in the patient. Therefore, the procedure was interrupted and the patient was taken to the emergency department; the procedure was then carried on with high-rotation tooth extraction devices. The vital signs of the patient were normal. The general condition of the patient was good, she was conscious and cooperative, there was edema on the right cheek and neck, and crepitation in the subcutaneous area in the physical examination. There was no redness and no increase in temperature. Maxillofacial Computed Tomography (CT) and Neck CT were carried out for the patient. In Figure 1, it was detected that there were free air areas in the orbital cavity on the right cheek, around the masseter muscle, in the parapharyngeal space, submandibular fossa, superficial cervical fascia and deep cervical fascia, in the visceral compartment extending into the mediastinum in the subcutaneous area and fascia. In Figure 2, subcutaneous emphysema and pneumomediastinum were detected; and otorhinolaryngology and thoracic surgery departments were consulted about the patient. Symptomatic and antibiotic treatment was started for the patient. Regression was determined in the symptoms of the patient during follow-up, and she was discharged with recommendations.

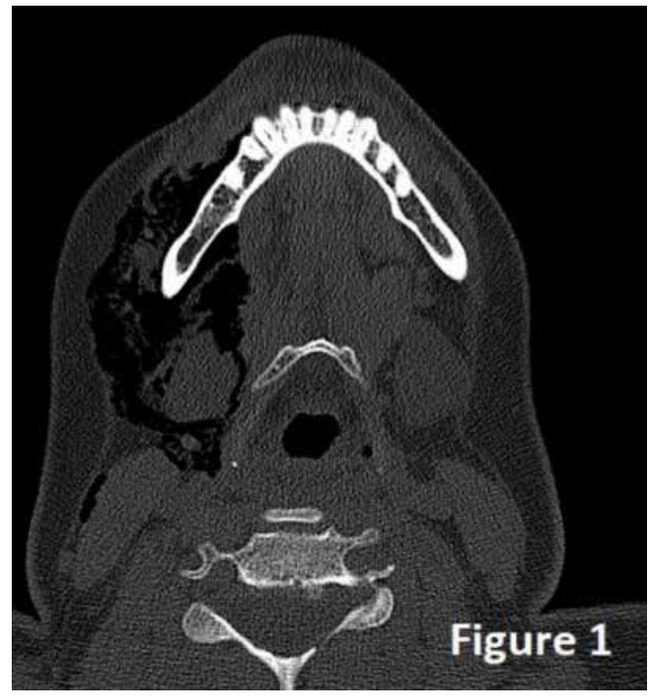

Figure 1. Free air images on the patient's maxillofacial CT

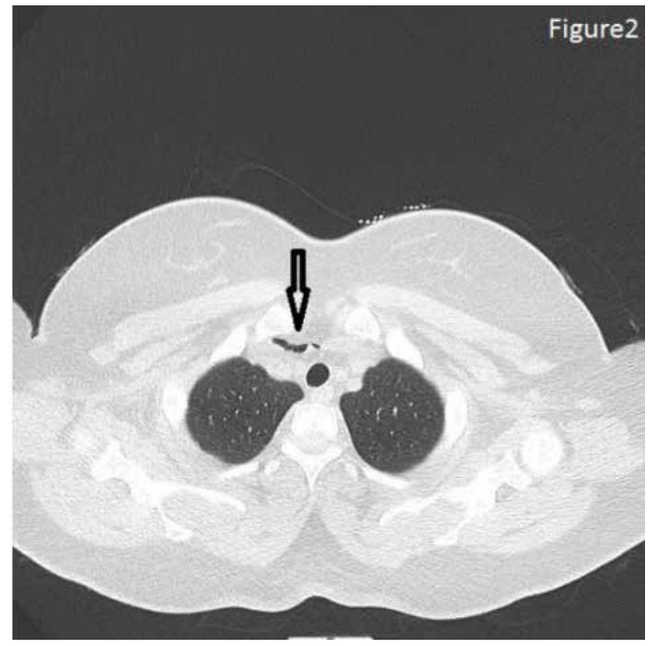

Figure 2. Free air images of the mediastinum in the thorax CT of the patient

Discussion

Subcutaneous emphysema and pneumomediastinum were reported in 1900 for the first time [6]. In the following years, compilation studies were released. In the compilation of Arai and McKenzie high-speed or air-pressure tooth extraction devices were reported as the cause in nearly half of the cases [2, 7, 8]. Such tools are designed to cut the tooth and cool the hot tooth surface by spraying water or air. Air leakage may occur from the treated area to the skin [9]. The roots of the 1st, 2nd, and 3rd molar teeth have connections to the sublingual and submandibular areas. The sublingual area has connection with the pterygomandibular, parapharyngeal and retropharyngeal area; and the retropharyngeal area has connection with the mediastinum. As the air amount that escapes increases, the probability of reaching deep tissues will also increase [10].

In the differential diagnosis of the swelling in the face or in the neck during or following dental surgery, there are hematoma, cellulitis, angioedema, allergic reactions, and subcutaneous emphysema [9,11]. Here, the most important step is being able to make the correct diagnosis [11]. Since subcutaneous

emphysema might occur bilaterally, the diagnosis is mostly considered as an allergic reaction in such cases, and this may lead to incorrect treatment modalities [12]. In our case, the patient was referred to the emergency department by the dentist with a preliminary anaphylaxis diagnosis.

In general, a patient who has isolated subcutaneous emphysema has only a painless and swollen face or neck. Although crepitation is often seen together with swelling, it may not always accompany. Among the symptoms and signs of pneumomediastinum, there are shortness of breath, and chest and back pain, and Hamman's mark (crackling sound at every heartbeat). As the imaging methods, Radiographic or CT imaging may show the air in the mediastinum and subcutaneous tissues [13,14,15]. Nonspecific ST-T changes may be detected in Electrocardiography [16].

The treatment is mostly symptomatic because the clinical progression of the disease is usually self-limiting and benign in general. Subcutaneous emphysema and pneumomediastinum start to be resorbed in 3-5 days; and full recovery is seen in 7-10 days. Empirical antibiotic therapy is recommended in case mediastinitis occurs [2].

Life-threatening outcomes of the air in the mediastinum are venous distension, hypotension, hypercarbia and acidosis. In case severe complications like tracheal compression, pneumopericardium, tension pneumothorax, air embolism and cardiac tamponade occur, surgical treatment may be necessary [17].

Considering the pneumomediastinum and the related outcomes that may threaten life in patient referring to emergency departments because of swelling in the face following tooth extraction are important for early diagnosis and treatment planning.

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Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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